REMARKS

By this Amendment, Figure 8 is corrected, the title is amended, the specification is amended, claims 5 and 14 are cancelled without prejudice or disclaimer, claims 1-4 and 10-13 are amended, and new claims 15-25 are added. Accordingly, claims 1-4, 6-13, and 15-25 are pending. Reconsideration of the application is respectfully requested.

I. The Drawings Satisfy All Formal Requirements

The drawings are objected to under 37 C.F.R. §1.83(a) because the drawings do not show "the step of aligning the BARs of the first wafer with the wells of the second wafer and then separating individual [filters] (claim 1); and the step of aligning FBAR filters ... with wells and separation into individual filters (claim 2) ..."

Applicants enclose a replacement sheet that makes changes to Figure 8 to add lines L indicating the positions at which individual devices are separated. Support for these changes is found, for example, in the second paragraph at page 10 of the specification as originally filed. Accordingly, withdrawal of this objection is respectfully requested.

II. In the Title

Applicants amend the title to be more clearly indicative of the invention to which the claims are directed.

III. The Specification Satisfies All Formal Requirements

Applicants amend page 10, second paragraph of the specification so that the specification reflects the changes to Figure 8.

IV. The Claims Define Allowable Subject Matter

Claims 1 and 10-11 are rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,666,706 to Tomita et al. ("Tomita"). This rejection is respectfully traversed.

Tomita does not disclose, teach or suggest "the bulk acoustic resonator devices of the first wafer are aligned with the wells of the second wafer and sealed by the second wafer," as recited in claim 1.

Tomita discloses resonating parts 13, which are part of a piezoelectric plate 11 (Figures 2a-2f). However, as shown in Figure 2f, the resonating part 13 is not sealed by bonding the piezoelectric plate 11 and substrate 16 to each other.

Further, Tomita does not disclose, teach or suggest, "providing a first wafer having a first surface..., with a plurality of bulk acoustic resonator devices disposed on the first surface..." As noted above, according to Tomita, the resonating parts 13 are part of a piezoelectric plate 11. Thus, the resonating parts 13 are not disposed on the surface of the piezoelectric plate 11. Thus, Tomita fails to disclose every feature recited in claim 1. Therefore, claim 1 is patentable over Tomita. Claims 10 and 11 are patentable over Tomita at least in view of the patentability of claim 1 from which they depend, as well as for the additional features they recite. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 1, 3-5 and 7-14 are rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 6,081,171 to Ella in view of U.S. Patent No. 6,106,735 to Kurle et al. ("Kurle"). This rejection is respectfully traversed.

Ella and Kurle, taken separately or in combination, do not disclose, teach or suggest

> "bonding the second wafer to the first surface of the first wafer and bonding the third wafer to the second surface of the first wafer to form a composite wafer in which the bulk acoustic resonator devices of the first wafer are aligned with the wells of the second wafer and sealed by the second wafer, and the cavities of the first wafer are sealed by the third wafer,"

as recited in claim 1. In particular, Ella and Kurle, taken separately or in combination, do not disclose, teach or suggest the bulk acoustic resonator devices "of the first wafer are aligned

with the wells of the second wafer" or "separating individual bulk acoustic resonator devices," as recited in claim 1.

Further, Ella and Kurle, taken separately on in combination do not disclose, teach or suggest providing a third wafer, "bonding the third wafer to the second surface of the first wafer" or "the cavities of the first wafer are sealed by the third wafer," as recited in claim 1.

Ella discloses a method of manufacturing a multi-pole BAWR-SCF device including two bulk acoustic wave resonators (BAW1, BAW2) and a stacked crystal filter (SCF4) (Figs. 20a-20c). Page 3 of the October 3, 2003 Office Action concedes "Ella does not disclose that the second wafer has a plurality of wells." The Office Action thus asserts that Kurle teaches a second wafer having a plurality of wells.

Kurle discloses a wafer stack with sensor elements, which are hermetically sealed. However, Kurle does not disclose, teach or suggest "bulk acoustic resonator devices" as recited in claim 1. Because Kurle discloses fabricating sensor elements and Ella discloses bulk acoustic wave resonators (BARs), it would not have been obvious to one with skill in the art to combine Kurle with Ella.

Moreover, neither Kurle nor Ella disclose providing the "third wafer" as recited in claim 1. Kurle only discloses a substrate wafer 1 and a cap wafer 3. Ella only discloses substrate 100 and substrate 103. Accordingly, neither Kurle nor Ella can reasonably be considered to disclose "bonding the third wafer to the second surface of the first wafer" or "the cavities of the first wafer are sealed by the third wafer," as recited in claim 1.

Thus, Ella and Kurle, taken separately or in combination, fail to disclose every feature recited in claim 1. Therefore, claim 1 is patentable over Ella and Kurle. Claims 3-5 and 7-14 are patentable over Ella and Kurle at least in view of the patentability of claim 1 from which they depend, as well as for the additional features they recite. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 1-14 are rejected under 35 U.S.C. §103(a) as unpatentable over Ella in view of Kurle and further in view of U.S. Patent No. 6,062,461 to Sparks et al. ("Sparks"). This rejection is respectfully traversed.

Sparks does not overcome the deficiencies of Ella and Kurle. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 1 and 3-14 are rejected under 35 U.S.C. §103(a) as unpatentable over Kurtz, "Simple Post-Processing Technique to Tune Resident Frequency of Film Bulk Acoustic Resonators and Stacked Crystal Lines" by Lakdawala et al. ("Lakdawala"), in view of Sparks. This rejection is respectfully traversed.

Kurtz, Lakdawala, and Sparks, taken separately or in combination, does not disclose teach or suggest

> "bonding the second wafer to the first surface of the first wafer and bonding the third wafer to the second surface of the first wafer to form a composite wafer in which the bulk acoustic resonator devices of the first wafer are aligned with the wells of the second wafer and sealed by the second wafer, and the cavities of the first wafer are sealed by the third wafer,"

as recited in claim 1.

The Office Action asserts that Kurtz discloses a method for hermetically packaging devices comprising "bonding the first and second wafers to each other to form a composite wafer (Fig. 6A-6B; col. 6, line 51+), and separating individual devices (along dicing lines 57; col. 6, lines 18-19." However, Kurtz discloses that individual cover members 40 are fabricated from a silicon cover wafer 55 prior to sealing (col. 6, lines 13-15). Accordingly, Kurtz does not teach bonding the first and second wafers to each other followed by the separation of individual devices as indicated in claim 1. Instead, Kurtz teaches separating individual cover members 40 and individual wafers 80 followed by bonding the individual cover members to the individual wafers. Accordingly, Kurtz does not disclose "bulk acoustic resonator devices of the first wafer are aligned with the wells of the second wafer and sealed

by the second wafer" and followed later by "separating individual bulk acoustic devices by sawing the composite wafer" as recited in claim 1. Lakdawala and Sparks do not overcome the deficiencies of Kurtz.

Regarding new claim 15, none of the applied references disclose, teach or suggest

> "forming holes in the composite wafer after formation of the composite wafer so that the holes reach metal tracks connected to the bulk acoustic resonator devices, and filling the holes with metal,"

as recited in claim 15.

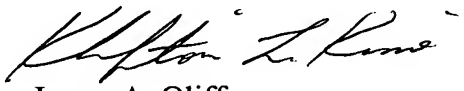
For at least these reasons, it is respectfully submitted that independent claims 1 and 15 are patentably distinguishable over the applied art. The remainder of the claims that depend from independent claims 1 and 15 are likewise patentably distinguishable over the applied art for at least the reasons discussed above, as well as for the additional features they recite.

V. Conclusion

For at least these reasons, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-4, 6-13 and 15-25 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Klifton L. Kime
Registration No. 42,733

JAO:KLK/kzb

Attachments:
Replacement Sheet
Amendment Transmittal

Date: May 25, 2004

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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